REMARKS/ARGUMENT

The present Amendment is filed as a ***submission*** with the filing of an RCE in accordance with 37 CFR §1.114. Further, in accordance with MPEP §1215.01, Applicant hereby withdraws the present application from appeal and reopens the prosecution of the application. Accordingly, the present Amendment is in response to the Final Office Action of July 16, 2003. An After-Final Amendment was submitted on September 16, 2003, but was not entered. The status of the claims in the present Application, prior to this Amendment, is according to the previous Amendment, submitted on April 29, 2003.

Claims 1, 3, 5, 7-13, 15-23, and 26-27 are pending after entry of the present Amendment. Claims 1, 3, 5, 7-8, 10-13, 15-17, and 19 are herein amended. Claim 1 is amended to incorporate the features previously recited in former claims 2 and 4. Claim 5 is amended to incorporate the features previously recited in former claim 6. Claims 15 and 19 are amended to include the limitation that the visualization is graphical and graphic respectively. The Examiner is kindly directed to page 5, lines 3-8, and Figures 1 and 2 and associated text, supporting the distinction between textual or text lists and graphical or graphic visualization of sets of data. Claims 3, 7-8, 10-13, and 16-17 are amended to effect minor grammatical correstions and update dependencies. No new matter is introduced. Claims 2, 4, 6, and 24-25 are herein canceled.

Rejections under 35 USC §102

Claims 1-27 were rejected under 35 USC §102(e) as being anticipated by Rajaraman et al. (U.S. Patent No. 6,366,910). Applicant traverses this rejection and requests reconsideration.

In order for a reference to anticipate a claim, each and every element as set forth in the claim must be found in the reference, either expressly or inherently described. MPEP 2131. Applicant respectfully submits that Rajaraman et al. do not anticipate Applicant's claims 1, 3, 5, 7-13, 15-23, and 26-27, as amended herein.

In independent claim 1, as amended herein, Applicant claims a method of information structuring in a data set containing a plurality of interrelated objects. The method includes ranking related objects based upon relationship strength. The ranking includes, for each related object to a selected object, calculating an affinity

value between each of the related objects and the selected object based upon one or more criteria, and ordering each of the related objects in the data set according to the affinity value between the related object and the selected object. The method further includes clustering related objects, and computing a number of affinity charts per object. The one or more criteria includes a subjective measurement.

Applicant reasserts the argument submitted in the Amendment of April 29, 2003. Additionally, Applicant submits that, at least, the Rajaraman et al. reference fails to teach the calculating of an affinity value between each of the related objects and the selected object based on one or more criteria, the one or more criteria including a subjective measurement. According to the Office in Paper No. 11 (the Final Office Action), the limitation of subjective measurement is met in Rajaraman et al. by "the search criteria, column 2, lines 9-23, column 3, lines 8-30, and column 4, lines 3-4." Applicant respectfully submits the Office is incorrect. The "search criteria" as used in Rajaraman et al. is the search term, which the Office corresponds to Applicant's ***selected object***, an affinity value being calculated between each of the ***related objects*** and the ***selected object*** in Applicant's claim 1. As stated in Rajaraman et al. at col. 3, lines 8-11, "When the GPS system inputs a search criteria, it scores each classification in the classification hierarchy to indicate the degree to which the classification contains items that match the search criteria." That is, the relationship calculated in Rajaraman et al. is between the search criteria and the classification. Similarly, at col. 4, lines 3-4, "The user enters the search criteria or query into search query box 106." The search criteria of the Rajaraman et al. reference is not subjective measurement, it is the term or item to which some relationship is determined, and that relationship is certainly determined according to some criteria, but nothing in Rajaraman et al. teaches a subjective measurement, much less exactly what the criteria may be. Therefore, the Rajaraman et al. reference fails to teach every feature as claimed by Applicant in independent claim 1, and Applicant requests that the §102 rejection of this claim be withdrawn. Claim 3, which depends from claim 1, is patentable for at least the same reasons.

In independent claim 5, as amended herein, Applicant claims a method of generating a graphical layout. The method includes selecting a principal node for the graphical layout, and generating at least one affinity chart in connection with the principal node. The at least one affinity chart is comprised of an affinity curve. The

method further includes sequentially establishing related items along the at least one affinity chart by rank.

According to the Office, the reference teaches a graphical layout and an affinity curve in Figure 4, and in the Abstract. Applicant respectfully disagrees and requests reconsideration. The Abstract is silent with respect to the nature of display (e.g., The system then displays the identified classifications), and in no manner teaches or suggests a graphical layout or affinity curves. Figure 4 "illustrates a hierarchical organization of the items" (col. 6, lines 26-27). Figure 4 in the Rajaraman et al. reference illustrates the hierarchical organization of data or items in a data set, most probably for ease of understanding that which is taught by the reference. The reference does not teach or suggest that the GPS generates a graphical layout, but the reference uses a "tree" to illustrate the hierarchy of the data. The GPS generates a list. The GPS, and the Rajaraman et al. reference does not teach or suggest the creating of graphic layouts or visualizations of data, but in fact a hierarchical list. Additionally, nothing in Figure 4 teaches or suggests an affinity curve. It is simply not there.

The Rajaraman et al. reference therefore fails to teach each and every feature as recited in Applicant's independent claim 5, and Applicant respectfully requests this rejection be withdrawn. Claims 7-13, each of which depend directly or indirectly from independent claim 5, are patentable for at least the same reasons.

In independent claim 15, as amended herein, Applicant claims a method for providing graphical visualization of items from data sets. The method includes determining, for a plurality of items from the data set, a set of properties. The set of properties includes a relationship to each other of the subsets of items in the data set, and a value applied to the relationships between the items. The method further includes applying local rankings of the relationships between terms. The applying is accomplished by ranking items i that relate to each item j, and ranking all items k to which item j relates, thereby ranking the affinity of each item j to item sets i and k. The method then includes generating a graphical visualization by presenting results separately for each item in a data set and adjusting the presentation to avoid information overlap and overload. The method further includes providing separate presentation for each item of the data set by generating an affinity chart for each item j in the data set. The presentation thereby displays items closely related to selected

item j, with item j placed prominently in the affinity chart, and placing items which are more strongly related to j closer to j.

As stated above, the Rajaraman et al. reference ***does not teach*** graphical visualization of data sets. Rajaraman et al. teach the display of text. See Figures 1A and 1B. Rajaraman et al. teach the generation of hierarchical lists, not graphical visualizations. Further, Rajaraman et al. teach identification of classifications of data that may satisfy a received search query. Because of the hierarchical nature of the data set, sub-sets or sub-classifications may be identified as well as general classifications, or as stated in the reference, *e.g.*, "the GPS search engine ensures that if an entry for the root of a classification sub-tree is in the result, then the result contains no entry for any descendent classifications" (col. 5, lines 40-43). The Rajaraman et al. reference does teach that hierarchical data sets include ancestor and descendent classifications. Rajaraman et al. ***do not teach***, however, the determinining of the relationships ***to each other*** of the subsets of items in the data set, a value applied to the relationships between items, and ranking the affinity of each item j to item sets i and k. In Rajaraman et al., the only relationships determined are between hierarchically classified sets, including ancestor and descendent items, of data and a search term. There is no relationship determined or calculated between items in the data sets.

Rajaraman et al. therefore do not teach each and every feature as recited in Applicant's independent claim 15, and Applicant requests that the §102 rejection be withdrawn. Claims 16-18, each of which depend, directly or indirectly from independent claim 15, are likewise patentable.

In independent claim 19, Applicant similarly claims the ***graphic visualization*** of data sets. As described at length above, Rajaraman et al. fail to teach graphic visualization, and in fact teach the display of text or textual lists. Further, because Rajaraman et al. teach the generation of lists, the suggestion that the reference teaches "adjusting the visualization to avoid information overlap and overload," or " spacing each related item individually with each item placed in a non-overlapping position" makes no sense. Adjustment to avoid overlap and overload is related to graphic visualization of data, but utterly unnecessary for text. And, as stated above, Rajaraman et al. simply do not teach using curves to represent a relationship between items. Applicant therefore requests the §102 rejection of this claim be withdrawn.

Independent claim 20 recites a method for providing visualization of arbitrarily large data sets using low and local computational resources. The method includes determining, for at least a plurality of said data sets, a set of properties, said set of properties including a relationship to each other of the subsets of items in the data set, and a value applied to the relationships between the items. Then, at least one primary item is determined for the visualization. The method then includes applying local rankings of the relationships between terms, by ranking a first relational set of items that relate to the primary item, and ranking a second relational set of items to which the primary item relates, thereby ranking an affinity to each primary item to the first relations set of items and to the second relational set of items. A visualization is generated by presenting results separately for each item in a predetermined data set and adjusting the presentation to avoid information overlap and overload. The method then includes providing separate presentation for each item of the data set by generating an affinity chart for each primary item in the data set, thereby displaying items closely related to a selected primary item, with the primary item placed prominently in the affinity chart, and placing items which are more strongly related to the primary items closer to the primary item. The method includes expressing closeness along curves or shaped segments, connected or emanating from the primary item's position. The expression of closeness includes completely or partially straight shaped segments. Continuous curves including spiral segments are employed in order to connect items relating to a primary item at different intensity levels. The method further includes adjusting the visualization to avoid information overlap and overload. The items related to the primary item are grouped by strength of affinity. Further provided is providing an affinity chart, and spacing each related item individually with each item placed in a non-overlapping position, and presenting items with large numbers of related items with multiple affinity charts, and in the case of multiple affinity charts, providing a first affinity chart to visually represent a set of most strongly related items and providing next or subsequent related affinity charts to visually represent less strongly related items. The method further provides for using curves to represent a relationship of items related to a particular item positioned at a starting point for the curve, with distance along the curve representing a strength of an affinity to the item at the starting point of the curve. Finally, the method includes selectively employing color and shading gradations and curve thickness gradations are

to emphasize the curve's role in conveying affinity strength, while placing items so they do not overlap or crowd each other.

As described above, the Rajaraman et al. reference does not disclose visualization, but instead teaches lists, and does not disclose relationships between data items and data sets, except for the terms or data returned from a search. Relationships are determined between a search query and items in hierarchically classified data, including ancestor and descendent items. The determination of relationships between items within sets, however, are neither disclosed nor suggested. Further, while Rajaraman et al. may teach highlighting or bolding of text, again, in lists, the selective employment of color and shading gradations and curve thickness gradations to emphasize the curve's role in conveying affinity strength is neither disclosed nor suggested by Rajaraman et al. For at least these reasons, Applicant submits Rajaraman et al. fail to anticipate Applicant's independent claim 20.

Applicant's independent claim 21 recites a method for providing visualization of large interrelated data sets. The method includes determining a relationship strength of related items in a data set. For each item in the data set, the method includes ranking related items based on the relationship strength and clustering related items based on the ranking. The method then includes computing a number of affinity charts per item, and establishing clusters of related items. The steps of ranking related items based on the relationship strength and computing the affinity charts are repeated until a desired information structure is achieved. The method then provides for positioning a principal node prominently in the affinity chart, and generating entries in the affinity chart emanating from the principal node for each of said clusters of related items.

For at least all of the reasons set forth above, Applicant submits that the Rajaraman et al. reference fails to anticipate Applicant's independent claim 21. Dependent claims 22-23, depending directly or indirectly from independent claim 21, are patentable for at least the same reasons.

In independent claim 26, Applicant claims a computer readable medium containing computer program instructions for providing visualization of items from data sets. The computer program instructions contain instructions for determining, for at least a plurality of said data sets, a set of properties, said set of properties including a relationship to each other of the subsets of items in the data set, and a value applied

to the relationships between the items. Further instructions include applying local linkings of relationships between terms, by ranking items i that relate to each item j, and ranking all items k to which j relates, thereby ranking the affinity to each item j to item sets i and k. Then, the instructions provide for generating a visualization by presenting results separately for each item in a predetermined data set and adjusting the presentation to avoid information overlap and overload. And finally, instructions are included for providing separate presentation for each item of the data set by generating an affinity chart for each item j in the data set, thereby displaying items closely related to selected item j, with item j placed prominently in the affinity chart, and placing items with are more strongly related to j closer to j.

As described at length above, the present invention describes, illustrates, and claims relationships between data sets, between data items, and between items in data sets. Applicant claims determining, for at least a plurality of said data sets, a set of properties, said set of properties including a relationship to each other of the subsets of items in the data set, and a value applied to the relationships between the items. Further, applying local linkings of relationships between terms, by ranking items i that relate to each item j, and ranking all items k to which j relates, thereby ranking the affinity to each item j to item sets i and k. The search and hierarchical classifications as described by Rajaraman et al. does not, and cannot, disclose these features.

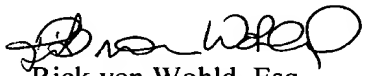
Similarly, Applicant's independent claim 27 recites a system for providing visualization of items from data sets at a first computer operably coupled to a second computer over a communications network. The system includes a computerized server associated with said second computer. The computerized server includes data set visualization software executable on said computerized server and configured to determine, for a plurality of said data sets, a set of properties, said set of properties including a relationship to each other of the subsets of items in the data set, and a value applied to the relationships between the items. Further, the server is configured to apply local rankings of the relationships between terms, by ranking items i that relate to each item j, and ranking all items k to which item j relates, thereby ranking the affinity of each item j to item sets i and k, and to generate a visualization by presenting results separately for each item in a data set and adjusting the presentation to avoid information overlap and overload. Finally the server is configured to provide a separate presentation for each item of the data set by generating an affinity chart for

each item j in the data set, thereby displaying items closely related to selected item j, with item j placed prominently in the affinity chart, and placing items which are more strongly related to j closer to j.

As described repeatedly, the Rajaraman et al. reference fails, at least, to teach data visualization, and fails to teach determining relationships to each other of the subsets of items in data sets. For at least these reasons, the Rajaraman et al. does not anticipate Applicant's independent claim 27.

In view of the foregoing, Applicant respectfully requests reconsideration of claims 1, 3, 5, 7-13, 15-23, and 26-27. Applicants submit that all claims are in condition for allowance. Accordingly, a notice of allowance is respectfully requested. If Examiner has any questions concerning the present Amendment, the Examiner is kindly requested to contact the undersigned at (408) 749-6900, ext. 6905. If any additional fees are due in connection with filing this amendment, the Commissioner is also authorized to charge Deposit Account No. 50-0805 (Order No. ROXIP277). A copy of the transmittal is enclosed for this purpose.

Respectfully submitted,
MARTINE & PENILLA, L.L.P.



Rick von Wohld, Esq.
Reg. No. 48,018

MARTINE & PENILLA, LLP
710 Lakeway Drive, Suite 170
Sunnyvale, California 94085
Customer Number 25920